**IT Applications Unit 3, AOS 1, Online Communities**

Complete the following, from pgs, 14-18: **Network communication standards**

**Networks are classified according to below and we will study the following:**

1. **Network Categories: LAN, WAN**
2. **Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet**
3. **Network communication standards**
4. **Network hardware and software**
5. **Transmission media**
6. **Network security**

**Network communication standards**

1. Why are network standards required?

Network standards are required to overcome problems such as incompatibility on a network and to ensure that all hardware and software products can be integrated into any network. It defines a set of guidelines which manufacturers must cover and specify how computers access the network, media used, speed of data transfer etc.

1. What is a protocol?

A protocol is a standard that defines how two computers or devices such on a network transmit data. It determines factors such as the type of error checking used, data compression method, how the device indicates it has finished a task etc.

1. What is the OSI?

The Open Systems Interconnection is a standard for network communications that defines a model for protocols using seven layers. Each layer uses the function of the one below it, and passes functionality to the one above.

**Ethernet**

1. Describe the nature of Ethernet.

The Ethernet is a network standard that controls the communication of all the devices on a network via a single cable. Any device connected to this cable can communicate with any other attached device, and also allows new devices to be connected into the network.

1. What are frames?

Frames are the short messages that travel between the nodes ion a network, containing packet information, send and receive addresses and a small amount of data.

1. Identify the 4 components of all Ethernet frames.

All frames contain the destination node address, the sending node address, some data, and also parity information, which checks that the frame has arrived correctly.

1. Fig. 1-9 on p 17 lists the Ethernet type, cable type, maximum length and transfer rate for Ethernet transmissions. The College typically uses 100BaseTX, Cat 5 or10Gbase-T. What are their respective maximum lengths and transfer rates?

* 100BaseTX: max length – 85 meters, transfer rate – 100 Mbps
* 10Gbase-T: max length – 85 meters, transfer rate – 10 Mbps

**TCP/IP**

1. Describe the nature of TCP/IP.

Transmission Control Protocol/Internet Protocol is the protocol on which the internet is based. It is responsible for packaging data for network transmission and specifies how data is carried from one part of a network to another.

1. TCP/IP uses smaller packets than other protocols. Why is this an advantage on the internet?

Using smaller packets on the internet is an advantage because it allows the network management software to balance the load of sending data through the network. By breaking up the load into smaller parts, it can be distributed to many different paths and prevent stress on one particular pathway from origin to destination.

**802.11 wireless standard**

1. What does this standard do?

The 802.11 wireless standard defines how two computers communicate with each other using radio waves. A network using this standard is known as a Wi-Fi network

1. What is a Wi-Fi network?

A Wireless Fidelity network allows computers within a range of 50 meters to be connected to the network without a wired connection.

1. Different wireless standards transmit at different frequencies. What is the advantage of the newer 802.11n standard?

The 802.11n transmits at 5 GHz or 2.4 GHz, which allows it to run at either a higher frequency and a higher data transfer rate, or a lower frequency. Older models of the 802.11 could only use one frequency or another, and by using both frequencies the 802.11n is expected to be both faster and have a higher range.